

We claim:

1. An external defibrillator that can be used to apply therapy to any patient, comprising:

an electrode adapted to couple externally to the body of a patient;

a sense circuit coupled to said electrode to sense a physiological signal of the patient indicative of intrinsic cardiac activity;

a cardiac arrhythmia detector coupled to said sense circuit to detect a life threatening cardiac arrhythmia based on said physiological signal;

a microprocessor-based controller adapted to generate automatically a command in the presence of said cardiac arrhythmia; and

a therapy delivery circuit adapted to deliver electrical therapy pulses to said patient to correct said cardiac arrhythmia in response to said command.

2. The defibrillator of claim 1 wherein said cardiac arrhythmia detector includes a comparator adapted to compare said physiological signal to a threshold value, said threshold value being generic to cardiac patients.

3. The defibrillator of claim 1 wherein said sense circuit includes a signal detector adapted to detect a specific cardiac signal based on generic criteria.

4. The defibrillator of claim 1 wherein said detector circuit is adapted to generate one shockable rhythm signal indicative of life threatening rhythms, for examples, a ventricular tachycardia and a ventricular fibrillation.

5. A publicly accessible external defibrillator for automatically generating a generic cardiac therapy for a person suffering from a life threatening cardiac condition, said external defibrillator comprising:

a first electrode adapted to be attached to said patient;

a detector circuit coupled to said first electrode and adapted to detect a life threatening cardiac condition based on a physiological signal sensed through said electrode, said detector circuit detecting said cardiac condition using non-patient specific criteria;

a microprocessor-based controller coupled to said detector circuit and adapted to generate a command in the presence of said life threatening condition; and

a pulse generator adapted to generate therapeutic pulses selected to terminate said life threatening cardiac condition in response to said command.

6. The external defibrillator of claim 5 further comprising a second electrode attached to said patient and being coupled to said pulse generator to deliver said therapeutic pulses to the patient's heart.

7. The external defibrillator of claim 5 wherein said first electrode is coupled to said pulse generator to deliver said therapeutic pulses to the patient's heart.

8. The external defibrillator of claim 5 further comprising a sensor circuit coupled to said first electrode to sense intrinsic cardiac signals, said sensor circuit being adapted to transmit said intrinsic cardiac signals to said detector circuit.

9. The external defibrillator of claim 5 further comprising a self-test and diagnostic circuit adapted to run tests on said external defibrillator to determine if said external defibrillator is operational.

10. The external defibrillator of claim 5 wherein said detector circuit is adapted to detect intrinsic cardiac signals and said controller is adapted to automatically generate said command in synchronism with said intrinsic cardiac signals.

11. The external defibrillator of claim 10 wherein said detector circuit is adapted to detect R-waves and said controller is adapted to generate said command at a predetermined interval after said R -waves.

12. The external defibrillator of claim 11 wherein said controller is adapted to delay said command after said R-wave, said delay being selected to insure that said therapeutic pulses do not coincide with a T-wave.

13. The external defibrillator of claim 5 wherein said detector circuit is adapted to monitor the heart automatically and continuously after said electrode is attached to said patient.

14. The external defibrillator of claim 5 further comprising an inhibit switch which may be operated by the patient or an attendant, and wherein said controller is adapted to delay said command if said inhibit switch has been activated to protect said patient from undesirable therapeutic pulses.

15. The external defibrillator of claim 5 further comprising a communication module, said controller being adapted to send a message automatically to a remote location through said communication module when said life threatening condition is detected, said message indicating one of the occurrence and detection of said condition and the patient's location.

16. The external defibrillator of claim 5 further comprising a data logging memory for logging information descriptive of said life threatening condition and the therapy delivered to revert said life threatening condition.

17. The external defibrillator of claim 5 further comprising a display, wherein said controller is adapted to provide on said display at least one of an instruction for the operation of the defibrillator and information indicative of a condition of the patient.

18. A method of providing public cardiac therapy to a patient suffering from a life threatening cardiac condition using an external defibrillator having an electrode, said method comprising the steps of:

attaching said electrode to the patient to sense a physiological signal indicative of intrinsic cardiac signals;

detecting a life threatening condition based on said physiological condition automatically using a set of generic criteria; and

applying automatically therapeutic pulses in response to said life threatening condition to said patient;

wherein said step of detecting said life threatening cardiac condition and said step of applying therapeutic pulses are performed without any involvement from an outside attendant.

19. The method of claim 18 wherein said step of detecting includes detecting an intrinsic QRS complex and generating an R-R interval based on successive QRS complexes.

20. The method of claim 18 further comprising performing a self-test on said external defibrillator after said electrode is attached to said patient to determine if said external defibrillator is operational.

21. The method of claim 18 further comprising data logging each episode of cardiac condition and the corresponding therapy.

22. The method of claim 18 wherein said defibrillator includes a communication module, further comprising generating a message to a remote location indicative of the

condition of the patient and sending said message to said remote location using said communication module.

23. The method of claim 18 wherein said external defibrillator includes a display, further comprising providing on said display instructions for the operation of the defibrillator.

24. The method of claim 18 wherein said therapeutic pulses are applied to the patient with said electrode.

25. The method of claim 18 wherein said external defibrillator includes another electrode and wherein said therapeutic pulses are applied to the patient through said another electrode.

26. A publicly accessible external defibrillator for generating a generic cardiac therapy for a person suffering from a life threatening cardiac condition, said external defibrillator comprising:

a first electrode adapted to be attached to said patient;

a detector circuit coupled to said first electrode and adapted to detect a life threatening cardiac condition based on a physiological signal sensed through said electrode, said detector circuit detecting said cardiac condition using non-patient specific criteria;

a microprocessor-based controller coupled to said detector circuit and adapted to generate a command in the presence of said life threatening condition; and
a pulse generator adapted to generate therapeutic pulses selected to terminate said life threatening cardiac condition in response to said command.

27. The external defibrillator of claim 26 wherein said controller is adapted to define a fully automatic mode of operation, where the device automatically detect life threatening arrhythmias and administrate therapy.

28. The external defibrillator of claim 27 wherein said fully automatic operation includes an advisory, or semi-automatic, mode of operation, where the device automatically detect life threatening arrhythmias and prompt the operator to deliver the therapy.

29. The external defibrillator of claim 27 wherein said controller defines a manual mode of operation, where the operator has the full control in delivering therapy.

30. The external defibrillator of claim 28 wherein said controller defines a manual mode of operation, where the operator has the full control in delivering therapy.